User's Manual USB GPS Receiver

Version 2.0e

1. Introduction

1.1 Overview

This product Smart GPS Receiver is a total solution GPS receiver, designed based on SiRF Star III Architecture. This positioning application meets strict needs such as car navigation, mapping, surveying, security, agriculture and so on. Only clear view of sky and certain power supply are necessary to the unit.saves critical satellite data by built–in backup memory. With low power consumption, the device tracks up to 20 satellites at a time, re-acquires satellite signals in 100ms and updates position data every second. Trickle-Power allows the unit operates a fraction of the time and Push-to-Fix permits user to have a quick position fix even though the receiver usually stays off.

1.2 Features

This product provides a host of features that make it easy for integration and use.

1. SiRFstarIII chipset with embedded ARM7TDMI CPU available for customized applications in firmware。
2. High performance receiver tracks up to 20 satellites while providing first fast fix and low power consumption.
3. Differential capability utilizes real-time RTCM corrections producing 1-5 meter position accuracy.
4. Compact design ideal for applications with minimal space.
5. A rechargeable battery sustains internal clock and memory. The battery is recharged during normal operation.
6. User initialization is not required.

1.3 Technology specifications

1.3.1 Physical Dimension Single construction integrated antenna/receiver.
Size: 53 x 15 (mm)
1.3.2 Environmental Characteristics
1) Operating temperature: -40oC to +80oC(internal temperature).
2) Storage temperature: -45oC to +100oC.
1.3.3 Electrical Characteristics
1) Input voltage: +4.5 ~ 5.5 VDC without accessories.
2) Backup power: 3V Rechargeable Lithium cell battery, up to 500 hours discharge.
1.3.4 Performance
1) Tracks up to 20 satellites.
2) Update rate: 1 second.
3) Acquisition time
Reacquisition 0.1 sec., averaged
Hot start 1 sec., averaged
Warm start 38 sec., averaged
Cold start 42 sec., averaged
4) Position accuracy:
A) Non DGPS (Differential GPS)
Position 5-25 meter CEP without SA
Velocity 0.1 meters/second, without SA
Time 1 microsecond synchronized GPS time
B) DGPS (Differential GPS)
Position 1 to 5 meter, typical
Velocity 0.05 meters/second, typical
C)EGNOS/WAAS/Beacon
Position < 2.2 meters, horizontal 95% of time
< 5 meters, vertical 95% of time
5) Dynamic Conditions:
Altitude 18,000 meters (60,000 feet) max
Velocity 515 meters / second (700 knots) max
Acceleration 4 G, max
Jerk 20 meters/second, max

2. Operational characteristics

2.1 Initialization

As soon as the initial self-test is complete, the device begins the process of satellite acquisition and tracking automatically. Under normal circumstances, it takes approximately 42 seconds to achieve a position fix, 38 seconds if ephemeris data is known. After a position fix has been calculated, information about valid position, velocity and time is transmitted over the output channel.

The device utilizes initial data, such as last stored position, date, time and satellite orbital data, to achieve maximum acquisition performance. If significant inaccuracy exists in the initial data, or the orbital data is obsolete, it may take more time to achieve a navigation solution. The device Auto-locate feature is capable of automatically determining a navigation solution without intervention from the host system. However, acquisition performance can be improved as the host system initializes the device in the following situation:

1) Moving further than 500 kilometers.
2) Failure of data storage due to the inactive internal memory battery.

2.2 Navigation

After the acquisition process is complete, the device sends valid navigation information over output channels. These data include:

1) Latitude/longitude/altitude
2) Velocity
3) Date/time

4) Error estimates
5) Satellite and receiver status
The device sets the default of auto-searching for real-time differential corrections in RTCM SC-104 standard format, with the message types 1, 5, or 9. It accomplishes the satellite data to generate a differential (DGPS) solution. The host system, at its option, may also command the device to output a position whenever a differential solution is available.

3. USB Driver

3.1 Installation

Connect the device USB connector to computer. While the computer automatically starts the installation program, please direct the driver to the < Driver\windows\GPS receiver Driver >.

3.2 Important

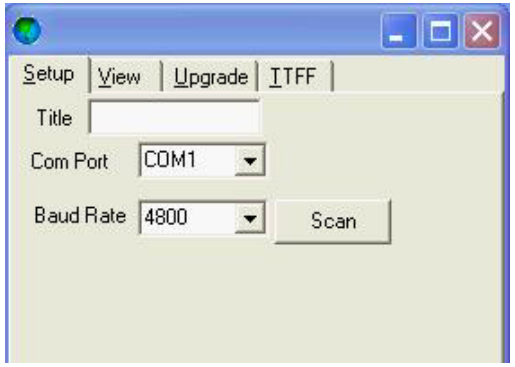
Verify the COM port # to start using your own navigating software.

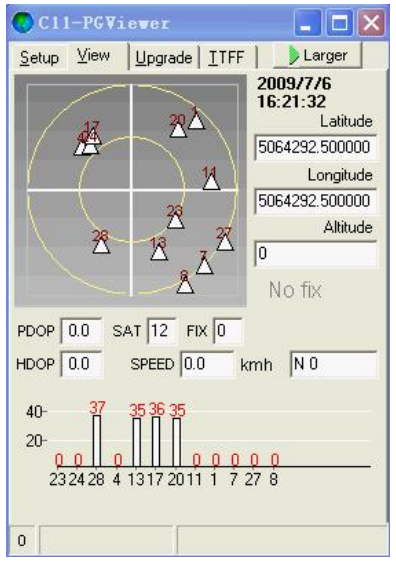
1. Click <Start> menu, select <Settings>, then enter <Control Panel>.
2. After entering <Control Panel>, select <System>.
3. Select <Device Manager>.
4. Find the <Connect port> and check the Virtual COM Port, which was created by the USB driver, Please note that the Virtual COM Port number might be different from every computer. Before using navigating software, please confirm the COM Port numbers created by your computer and provided by your navigation software. Otherwise, the navigating software won't receive the satellite signal, because of the un-match COM Port setting.

4.GPS Viewer (Test Tool)

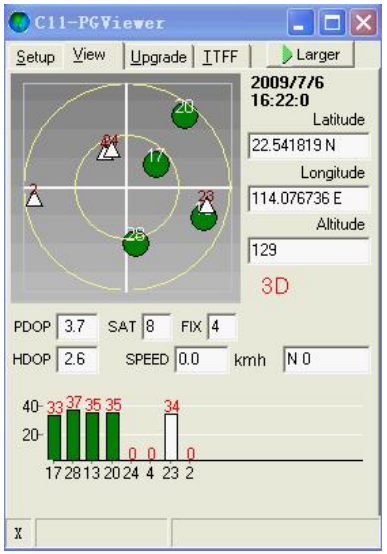
(GPS Viewer for Windows OS only)

1. Copy entire<GPS Test> folder from CD to hard disk of your computer
2. please run the <GPS Test>\<GPS Viewer>,after entering the interface of operations directly.
3. Setup the <PORT (COM PORT)> and <F/W Baud >(default 4800) in the <Setup>
4. Select <View>,after showing the GPS situation.





Searching for satellite



Fixed GPS position

*** * * C A U T I O N ! * * ***

We strongly advise users of this product to read the manual carefully.

The device may not function properly if it is connected to the computer which is starting up, restarted, or restored from sleep mode. Always disconnect the device from the computer before performing any of these operations.

Do not place the device in locations that are:
– extremely hot or cold – dusty or dirty
– very humid – vibrating
– exposed to corrosive gases – exposed to direct sunlight

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